

April 17, 1962

H. WEY

3,029,706

DEVICE FOR GUIDING AN AMMUNITION BELT

Filed March 25, 1959

2 Sheets-Sheet 1

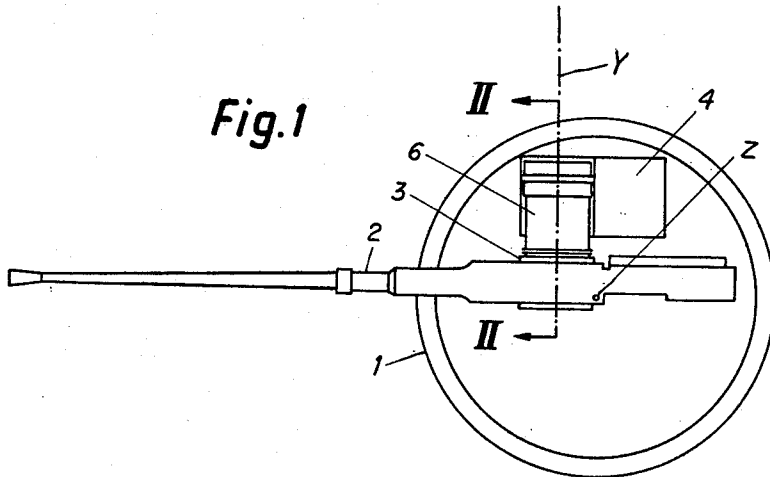
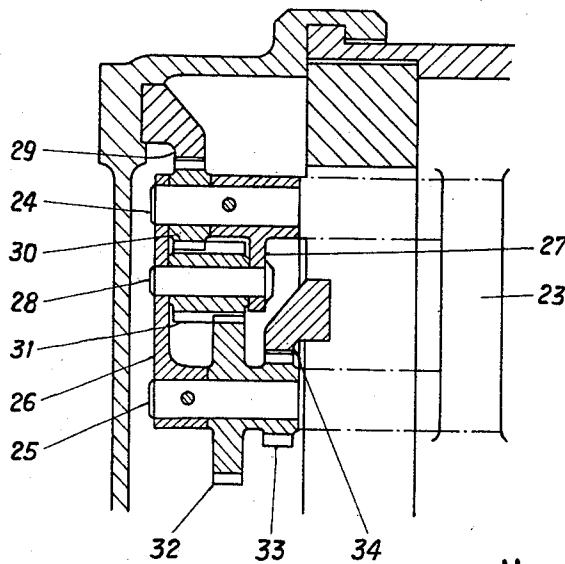


Fig. 4



Hermann WEY
INVENTOR

By:
Wendroth, Lind & Ponack
Attys

April 17, 1962

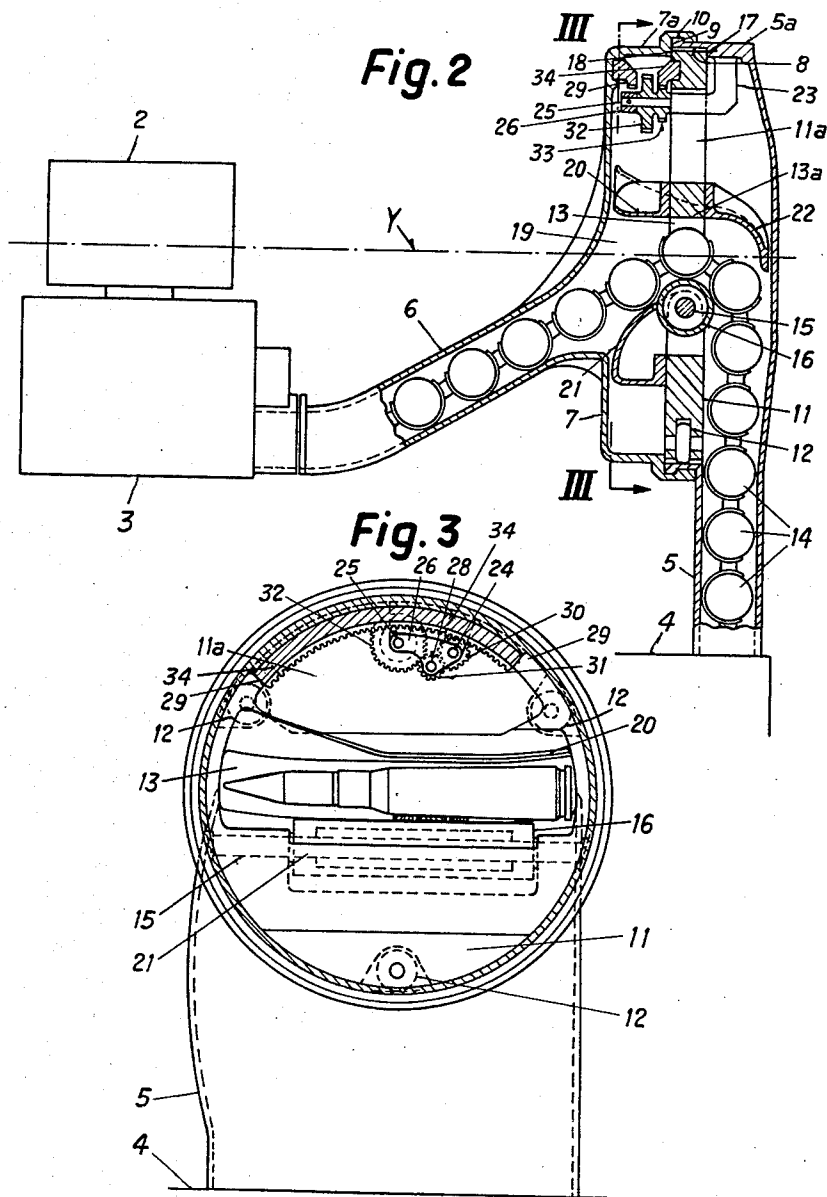
H. WEY

3,029,706

DEVICE FOR GUIDING AN AMMUNITION BELT

Filed March 25, 1959

2 Sheets-Sheet 2



Hermann WEY
INVENTOR

By:
Wenderoth, Lind & Ponack
Attys

1

3,029,706

DEVICE FOR GUIDING AN AMMUNITION BELT
Hermann Wey, Wallisellen, Zurich, Switzerland, assignor
to Machine Tool Works Oerlikon, Administration Com-
pany, Zurich-Oerlikon, Switzerland, a company of
Switzerland

Filed Mar. 25, 1959, Ser. No. 801,934

Claims priority, application Switzerland Apr. 3, 1958

7 Claims. (Cl. 89—33)

The present invention relates to a device for guiding an ammunition belt between the outlet opening of an ammunition container for such belt and a supply channel connected to a weapon, which can be laid in elevation.

In known devices of this kind the ammunition belt is guided between the outlet duct of the ammunition container and the weapon by a fixed channel connected to the latter. The pivot axis must then lie co-axially to the elevation laying axis of the weapon. The strong twisting of the belt occurring at the juncture at high elevations of the weapon gives, however, often rise to stoppages in the transport of the belt, particularly when the same has to be deflected at the juncture in yet another direction.

The invention has the principal object of improving the guiding of the said ammunition belt from the said ammunition container to the said weapon, and more particularly of reducing the twisting of said belt at the juncture between the said container and the said supply duct.

With these and other objects in view which will become apparent later from this specification and accompanying drawings, I provide a device for guiding the ammunition belt to the said weapon comprising in combination: an ammunition container having an outlet opening for the said belt, a supply duct connected to the said weapon, a disc mounted rotatably about an axis co-axial to the elevation laying axis of the said weapon between the said outlet and the said supply duct and having a passage opening for the said belt, and curved guide sheets mounted on the said disc, the said guide sheets and passage opening bounding an intermediate duct connecting the said outlet opening to the said supply duct.

Preferably this device comprises a reduction gearing transmitting a turning movement of the said weapon about its elevation laying axis to the said disc in the same sense of rotation but through a reduced angle.

These and other features of my said invention will be clearly understood from the following description of a preferred embodiment thereof given by way of example with reference to the accompanying drawings, in which:

FIG. 1 shows a gun with ammunition container in plan view.

FIG. 2 shows the cartridge belt guide between the ammunition container and the weapon in section on the line II—II of FIG. 1, on a larger scale.

FIG. 3 is a section of the disc on the line III—III of FIG. 2, and

FIG. 4 is a diagrammatic sectional view of the drive of the disc, on yet a larger scale.

In FIG. 1, on the rotatable ring 1 of the upper carriage of a gun, the weapon 2 is carried in a manner not shown in detail. The upper gun carriage can be swung all round with the weapon about the azimuth laying axis Z. Y is the elevation laying axis of the gun. From the ammunition container 4 connected to the upper gun carriage the ammunition belt is passed through the supply duct 6 into the belt feeder device 3 of the weapon 2.

According to FIG. 2 the belt is guided upward from the ammunition container 4 by the outlet duct 5, which

2

has its longitudinal side directed parallel to the weapon. A circular guide track 8 is connected to the upper portion of this duct, the axis of which track coincides with the elevation laying axis Y produced. A supply duct 6 of rectangular cross section is connected at one of its ends to the belt feeder device 3 of the gun 2, the entrance opening of which is arranged at a certain distance from the elevation laying axis. The other end of this supply duct is enlarged in a drum-shape. A flange 9 imposed on the guide track 8 engages into a groove 10 machined into the outer wall 7a of this enlargement and acts as a guide and centering means for the guide duct 6 which is connected to the weapon, rotatably about the elevation laying axis.

As a connection between the outlet duct 5 of the ammunition container and the entry into the supply duct 6 an intermediate duct 19 is provided which is fixedly connected to a disc 11. This disc, together with the said intermediate duct, is rotatable about an axis lying co-axially to the elevation laying axis, in that rollers 12 are journaled at its circumference which can roll on the said guide track. In the disc a passage 13 is cleared for the cartridge belt 14, which passage is directed transversely of the axis rotation of said disc and forms part of the intermediate duct 19, a roller 16 being journaled rotatably about an axle 15 parallel to this passage in an enlargement of the latter and serving for the deflection of the said belt. This roller projects so far into the said passage that the axes of the cartridges moving over the same approximately intersect the axis of rotation of the said disc. The produced axis of the straight portion of the supply duct issuing into the enlargement 7 intersects the axis of rotation of the disc in the middle plane thereof.

The faces 17 and 18 of the semi-circular wall 5a of the outlet duct and of the drumshape enlargement 7 of the supply duct serve as lateral guides for the disc 11. The intermediate duct 19, which is movable together with the disc, is bounded on the one side by guide sheets 20, 21 fixed to the disc, and on the other side by a guide sheet 22 running tangentially towards the side wall of the outlet duct, by the upper side 13a of the passage and by the surface of the roller 16. The guide sheet 20 is turned up increasingly in front. The enlargement of the intermediate duct increasing in size towards the supply duct allows the twisting of the belt, and a corresponding design of the supply duct entry permits the guiding of the belt into the same.

On the wall 5a of the outlet duct a bracket 23 is mounted which reaches through a window 11a of the disc and to which the two axles 24 and 25 (FIGS. 3 and 4) are fixedly connected. A lug 26 is imposed upon these axles. A further lug 27 is fixed on the axle 24. On an axle 28 arranged between these lugs an intermediate gear pinion 31 is journaled, which is in mesh on the one hand with a pinion 30 journaled on the axle 24 and on the other hand with a gear journaled on the axle 25. The gear 32 is moreover connected to a pinion 33, which rolls on an internally toothed segment 34 fixed to the disc 11. The drive is effected from an internally toothed segment 29 connected to the side wall of the drum 7 and in mesh with the pinion 30. Thereby the rotational movement of the supply duct 6 connected to the weapon is transmitted to the disc 11 in such a manner that the latter turns in the same sense but only a fraction, conveniently half, the angle of rotation of the supply duct.

The twisting of the ammunition belt reduced by the described means according to the invention can take place in the very short intermediate duct portion between the roller 16 and the entry into the supply duct, and allows a faultless transport of the belt even at high elevations.

3

While I have described herein and illustrated in the accompanying drawings what may be considered a typical and particularly useful embodiment of my said invention, I wish it to be understood that I do not limit myself to the particular details and dimensions described and illustrated; for obvious modifications will occur to a person skilled in the art.

What I claim as my invention and desire to secure by Letters Patent is:

1. A device for guiding an ammunition belt comprising in combination a gun including a supply duct and capable of being laid in elevation about an elevation laying axis, an ammunition container for an ammunition belt, an outlet duct fixed to said container, an intermediate duct adjacent to said supply duct and to said outlet duct to form together with said outlet duct and said supply duct a guide track for said belt, said intermediate duct mounted rotatably about said elevation laying axis and being rotatable relative to said supply duct and a gear connection between said gun and said intermediate duct to transmit a turning movement of said gun about its elevation laying axis to said intermediate duct in the same sense of rotation but through a reduced turning angle.

2. A device for guiding an ammunition belt comprising in combination a gun including a supply duct and capable of being laid in elevation about an elevation laying axis, an ammunition container having an outlet duct, said supply duct and said outlet duct having enlarged end portions, said end portions being pivotally connected together and forming a chamber, an ammunition orienting disc disposed rotatably about said elevation laying axis in said chamber and a gear connection between said gun and said disc to adjust the latter proportionately to said elevation of said gun.

3. A device for guiding an ammunition belt comprising in combination a gun including a supply duct and capable of being laid in elevation about an elevation laying axis, an ammunition container for an ammunition belt, an outlet duct fixed to said container, an intermediate duct, said supply duct and said outlet duct having enlarged end portions, said end portions being pivotally connected together and forming a chamber, an ammunition orienting disc having a passage opening for said belt, curved guide sheets mounted on both sides of said disc, said disc forming with its passage opening and together with said guide sheets said intermediate duct, the latter being disposed rotatably about said elevation laying axis in said chamber to form together with said outlet duct and with said supply duct a guide track for said belt, and a gear connection between said gun and said intermediate duct to transmit a turning movement of said gun about its elevation laying axis to said intermediate duct in the same sense of rotation but through a reduced angle of about one to two.

4. A device for guiding an ammunition belt comprising in combination a gun including a supply duct and capable of being laid in elevation about an elevation laying axis, an ammunition container having an outlet duct, said supply duct and said outlet duct having enlarged end portions, said end portions being pivotally connected together and forming a chamber, an ammunition orienting disc disposed rotatably about said elevation laying axis in said chamber, a bracket in said chamber fixed to said enlarged end portion of said outlet duct, a first rack

4

segment in said chamber fixed to said enlarged end portion of said supply duct, a second rack segment in said chamber fixed to said disc, said disc having a window, said bracket reaching through said window, a reduction gearing supported on said bracket in mesh with said first and second segments, said reduction gearing forming together with said first and second segments a gear connection between said gun and said disc to adjust the latter proportionately to said elevation of said gun.

5. A device for guiding an ammunition belt, comprising in combination a gun including a supply duct and capable of being laid in elevation about an elevation laying axis, an ammunition belt, an ammunition orienting disc disposed adjacent an ammunition belt, an ammunition orienting disc disposed adjacent said supply duct forming together with the latter a guide track for said belt, said orienting disc having an axis coinciding with said elevation laying axis and being rotatable about said elevation laying axis relative to said supply duct, a driving connection between said gun and said orienting disc, said driving connection including a reduction gearing transmitting a turning movement of said gun about its elevation laying axis to said orienting disc in the same direction of rotation but through a reduced turning angle.

6. A device for guiding an ammunition belt, comprising in combination a gun including a supply duct and capable of being laid in elevation about an elevation laying axis, an ammunition belt, an ammunition orienting disc disposed adjacent said supply duct forming together with the latter a guide track for said belt, said orienting disc having an axis coinciding with said elevation laying axis and being rotatable about said elevation laying axis relative to said supply duct, a reduction gearing including a driving part and a driven part, said driving part being secured to said gun and said driven part being secured to said orienting disc, said reduction gearing being adapted to transmit a turning movement of said gun about its elevation laying axis to said orienting disc in the same direction of rotation but through a reduced turning angle.

7. A device for guiding an ammunition belt, comprising in combination a gun including a supply duct and capable of being laid in elevation about an elevation laying axis, an ammunition belt, an ammunition orienting disc disposed adjacent said supply duct forming together with the latter a guide track for said belt, said orienting disc having an axis coinciding with said elevation laying axis and being rotatable about said elevation laying axis relative to said supply duct, a reduction gearing having a driving part, an intermediate part and a driven part, said reduction gearing including supporting means for said intermediate part, said gun and said orienting disc being rotatable relative to said supporting means, said driving part being secured to said gun and said driven part being secured to said orienting disc, said reduction gearing being adapted to transmit a turning movement of said gun about its elevation laying axis to said orienting disc in the same direction of rotation but through a reduced turning angle.

References Cited in the file of this patent

UNITED STATES PATENTS

2,300,602	Trotter et al. -----	Nov. 3, 1942
2,649,840	Davidson -----	Aug. 25, 1953
2,936,677	Vickers -----	May 17, 1960